Annual Battery Technology & Investor Day

June 12, 2024

Toronto Stock Exchange (Nasdaq:ELVA) & (TSX:ELVA)

Nasdaq: ELVA | TSX: ELVA

Disclaimer

This presentation contains forward-looking statements, including statements that relate to, among other things, the effect of the COVID-19 public health emergency on the Company's operations, its employees and other stakeholders, including on customer demand, supply chain, and delivery schedule, the size of the Company's sales pipeline and the ability to satisfy orders thereunder, the Company's ability to satisfy its ongoing debt obligations, anticipated increased collaboration with OEMs and OEM channels constituting a source of sales growth for the Company, anticipated continued increase in sales momentum in fiscal 2024 through OEMs and directly to large global companies, including Fortune 500 companies, the future direction of the Company's business and products, including E-bus, E-truck and Energy storage applications and additional intellectual property protection, the Company's ability to source supply to satisfy demand for its products and satisfy current order volume, technology development progress, all trademark logos and trademarks are owned by the respective Company's, pre-launch plans, plans for product development, plans for shipment using the Company's technology, production plans, the Company's markets, objectives, goals, strategies, intentions, beliefs, expectations and estimates, and can generally be identified by the use of words such as "may", "will", "could", "should", "would", "likely", "possible", "expect", "intend", "estimate", "anticipate", "believe", "plan", "objective" and "continue" (or the negative thereof) and words and expressions of similar import. Although the Company believes that the expectations reflected in such forward-looking statements are reasonable, such statements involve risks and uncertainties, and undue reliance should not be placed on such statements. Certain material factors or assumptions are applied in making forward-looking statements, and actual results may differ materially from those expressed or implied in such statements. Important factors that could cause actual results to differ materially from expectations include but are not limited to: natural disasters, unusually adverse weather, epidemic or pandemic outbreaks, cyber incidents, boycotts and geopolitical events; the COVID-19 outbreak will not have significant further effects on the Company's supply chain or operations; that current customers will continue to make and increase orders for the Company's products, and in accordance with communicated intentions, that the Company's alternate supply chain will be adequate to replace material supply and manufacturing, Additional information about material factors that could cause actual results to differ materially from expectations and about material factors or assumptions applied in making forward-looking statements may be found in the Company's Annual Information Form for the year ended September 30, 2023 under "Risk Factors", and in the Company's most recent annual Management's Discussion and Analysis under "Qualitative And Quantitative Disclosures about Risk and Uncertainties" as well as in other public disclosure documents filed with Canadian securities regulatory authorities. The Company does not undertake any obligation to update publicly or to revise any of the forward-looking statements contained in this document, whether as a result of new information, future events or otherwise, except as required by law. These and other risks and uncertainties related to Electrovaya's business and the assumptions on which the forward-looking information is based are described in greater detail in the sections entitled "Risk Factors" in its Annual Report on Form 40-F filed with the U.S. Securities and Exchange Commission and the Ontario Securities Commission in Canada. Electrovaya assumes no obligation to update or revise any forward-looking statements, except as required by applicable laws. These forward-looking statements should not be relied upon as representing Electrovaya's assessments as of any date subsequent to the date of this presentation.

Electrovaya at a Glance

28,000+
Deployed Infinity batteries
Zero Safety incidents

100+
Patents

27+
Years
NA-Owned

14
Fortune 100 customers

2 GWh
Capacity By 2028

45
Engineers & Scientists

Footprint & Presence
200+
Installed Locations in 4 continents

YOY growth
>100%
EBITDA Profitable over the last 4 Quarters

Our Products: Complementary Technology Solutions

Complementary technologies targeting a number of EV applications
Infinity Batteries provide industry leading longevity and SSBs provide industry leading energy density

Infinity Batteries

Commercial today
Global partners & users

Superior Safety & Lowest Cost of Ownership

Based on proprietary separator and electrolyte technology

E-forklift, E-trucks, E-bus and Energy Storage Systems

Solid State Batteries

In development stage

Highest Energy Density

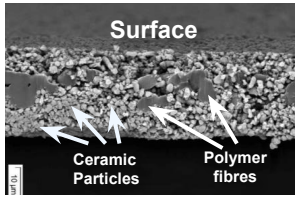
Based on proprietary separator and electrolyte technology

Passenger EVs, Over the road (OTR) trucking, aerospace

Technology Portfolio

Proprietary Technology

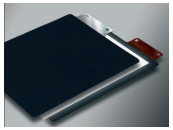
Fully Ceramic Separator



Patented unique ceramic separator offers increased thermal stability, unparalleled safety with high power capabilities.
(32 patents)

Unique cell assembly process

Unique cell design, electrode processing, manufacturing process, and optimised electrolyte formulation for ultra long cycle life at RT and high temperature applications.



Cell Chemistries for various applications

NMC

Lithium Nickel-Manganese-Cobalt Oxide (NMC)

- Ultra long cycle life
- Balanced Power-Energy
- Superior safety
- Flexible form factor

LFP

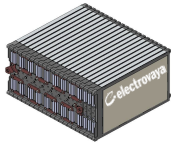
Lithium Ferrophosphate (LiFePO4)

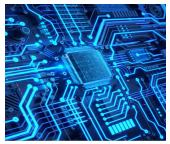
- Ultra long cycle life
- High Power
- Superior safety
- Lower cost

Unique Capabilities

Cells

Modules & BMS





Packs

Longevity- Infinity Competitive Advantage #1

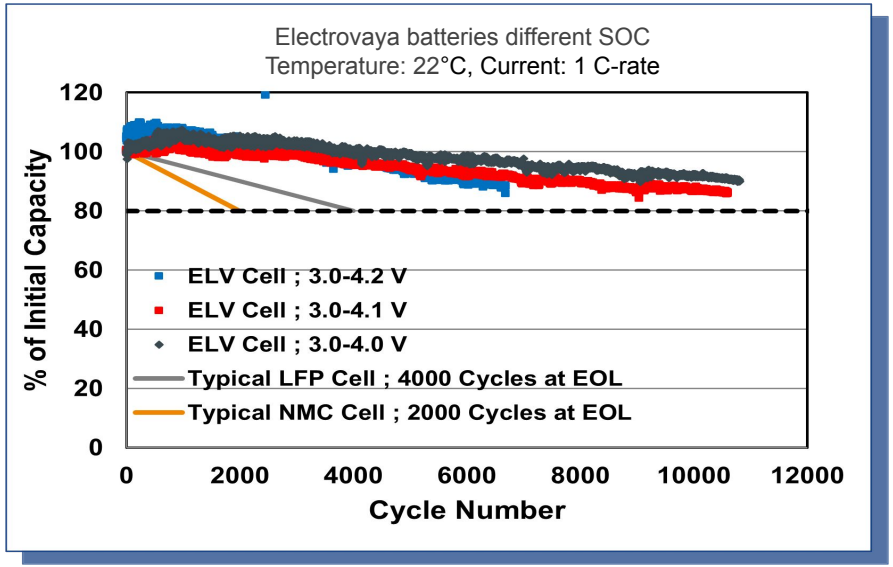
Eectrovaya's patented *Infinity* technology provides the <u>longest lasting</u> high energy Lithium ion battery, setting industry standards

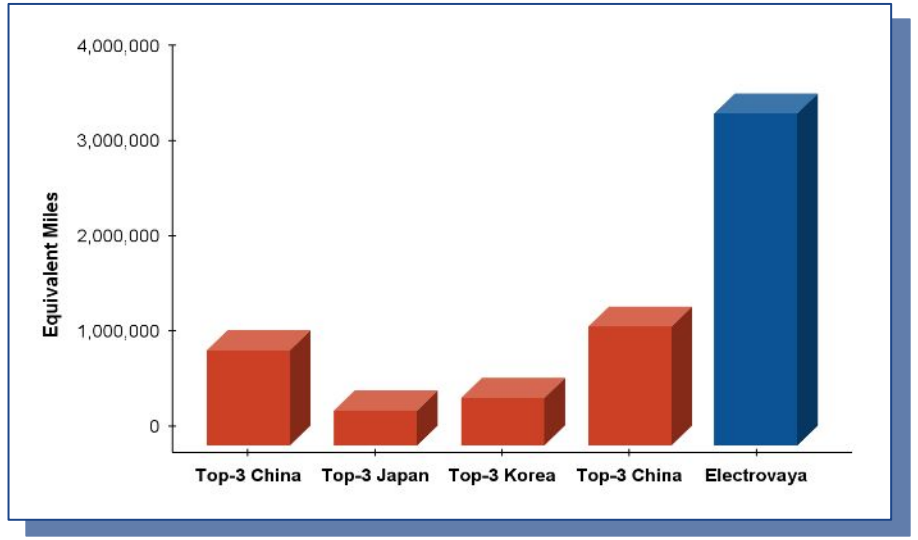
- **Proprietary technologies that reduce parasitic reactions have demonstrated significantly improved cycle lifer performance for Electrovaya's infinity batteries**
- **Infinity batteries at Walmart warehouses showed >97% capacity retention after 5 years of intense use operating 12-24 hours per day**

<u>>3,000,000</u> equivalent miles

Multi-Million-Mile Batteries- Performance Advantage

***Cycle equivalent:**
14,000 cycles is equivalent to 3,500,000 miles for 250-mile range car





Battery Safety: Infinity Competitive Advantage #2

Over 28,000 Electrovaya *infinity* batteries deployed in customer sites had to meet extreme performance, stringent safety and quality standards.

- **An earlier iteration of our Infinity technology has been used in ~20,000 Daimler Smart cars (no active cooling).**
- **7500+ Material Handling/AGV battery systems Deployed in customer sites**

<u>Zero</u> Safety incidents

Third Party Testing & Certification

Proven technology supported by extensive 3rd party testing & validation

Performance

- ✓ Cycle life
- ✓ Internal resistance
- ✓ Temperature effect
- ✓ Power capability
- ✓ Ageing

DNV

&

Internal/Customer testing

Safety

Cells, modules & packs

Cells passed all abuse tests at EUCAR Hazard Level 2 or 3

UL2580, UL1642, UL1973

TÜV SÜD

ECE R100.3

Sandia National Laboratories

SAND 2005-3123

UN38.3

Quality

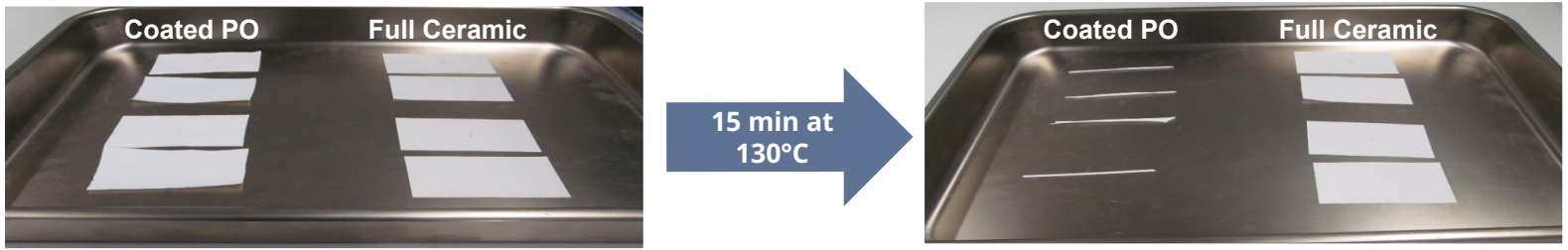
Our production sites adhere to the utmost quality standards

ISO 9001:2015

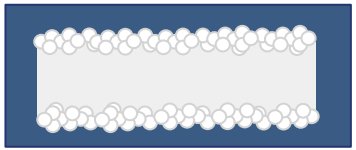
TPS

Product Differentiation: Ceramic Separators

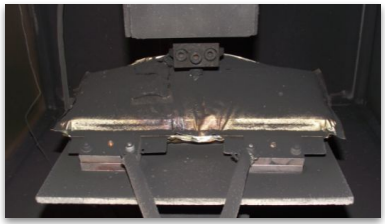
Full Ceramic vs Coated PO Separator Thermal Stability



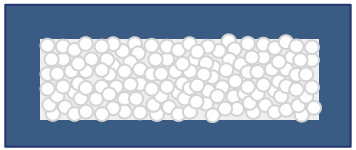
Ceramic-Coated PO Separator (Competitors)



Nail Penetration test



Fully Embedded Ceramic Separator (Electrovaya)

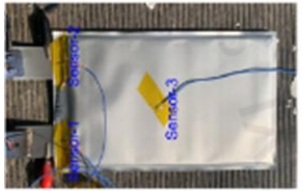


Nail Penetration test

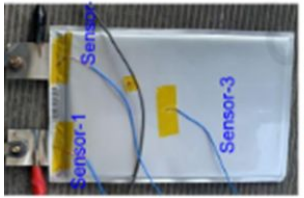
Electrovaya Cell Safety Tests

All abuse tests according to UL 2580, UL 1642 , and UL 1973 achieved hazard levels 2 and 3

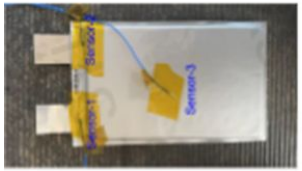
ELECTRICAL



Over-Charge (EUCAR 2)



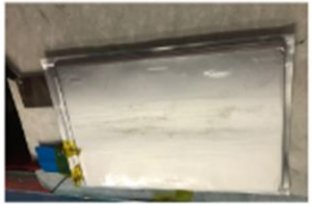
Short Circuit (EUCAR 2)



Forced Discharge (EUCAR 2)

MECHANICAL

Nail (EUCAR 2)

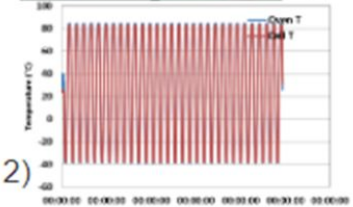


Crush (EUCAR 2)

Drop (EUCAR 2)

THERMAL

Temperature cycling (EUCAR 2)



Heating (EUCAR 2)

Electrovaya Battery Safety - Fire Propagation

Internal Fire Propagation Test

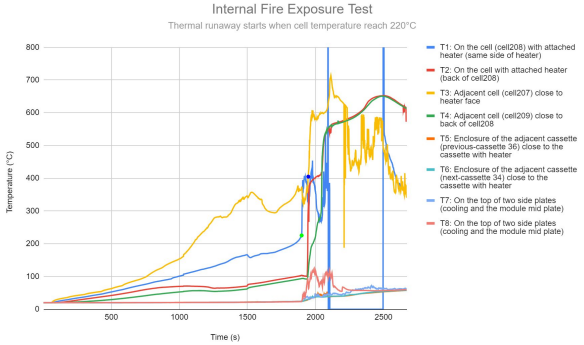
Pictured: an Electrovaya high voltage 75kWh battery AFTER fire propagation testing (May 2024)

- Individual cell in fully charged pack that was centrally located within the pack was heated by electric heater pad until thermal runaway (~220°C)
- The thermal runaway of the cell shall be reached with 5-7° C/min to the onset temperature thermal runaway.
- No internal propagation as the maximum temperature of the adjacent sub-module hit 60°C indicating the fire was contained within the faulted sub-module
- No flames escaped the battery enclosure

After Test

Top View Image of the Battery during the test

ONLY Small Smoke as a result of the Thermal Runaway



Key Market Challenge: A multi-billion dollar opportunity

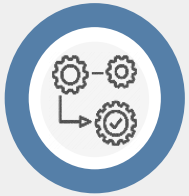
Our technology is the ONLY high-performance battery technology that is a true fit for fast growing, mission critical heavy-duty equipment market

Industry Challenge

- Safety and longevity challenges with legacy lithium ion tech; not working for heavy duty applications!
- High profile recalls due to safety: Volvo bus & truck, Proterra, Nikola and others
- LFP energy density is too low for many applications and highly dependent on Chinese technology & supply chains

Our Solution

- **Longer Lifetime:** Our Infinity Technology offers the highest cycle with over 4X the life of typical batteries of the same chemistry
- **Improved Safety:** Electrovaya batteries use a proprietary ceramic separator membrane that significantly improves safety.
- **Heavy Duty Applications:** Mission critical applications incl. Material handling, mining, trucks and buses



Proven Execution

- **Scaled:** Deliveries of battery systems increasing more than 100% year over year
- **Proven:** Proven technology and manufacturability - >5 years of field data with major customers
- **Reliable:** Operating in mission critical 24/7 warehouse operations at the largest companies in the world (>12 Fortune 100 end users)

Market Opportunity: Infinity Batteries

Take-away message? A multi-billion dollar addressable market for batteries that are safe, efficient, have a long useful life and low cost of ownership?

APPLICATION	USAGE	MARKET SIZE
 **E-Buses E-Delivery Trucks**	12-20 hrs/day	~ $9.6 Billion Addressable Market*
 **E-Forklifts/ Warehousing**	20-24 hrs/day	~ $4.5 Billion Addressable Market*
 **Stationary energy storage**	12-20 hrs/day	~ $4.2 Billion Addressable Market*

Battery Requirements: Efficiency, Lifetime, Safety & Cost of Ownership

*Data Numbers Obtained Through MarketWatch

Electrovaya Batteries Powering …

Warehousing Vehicles

Large AGVs

UGV

Large Industrial Vehicles

Small AGV

E-Bus

What’s Next …

Electrovaya Launches its Infinity LFP Cell Product

Infinity Series LFP based Lithium-ion cells featuring Electrovaya's proprietary ceramic composite separator and electrolyte for extreme cycle life and enhanced safety

Start of Deliveries: Q1, 2025

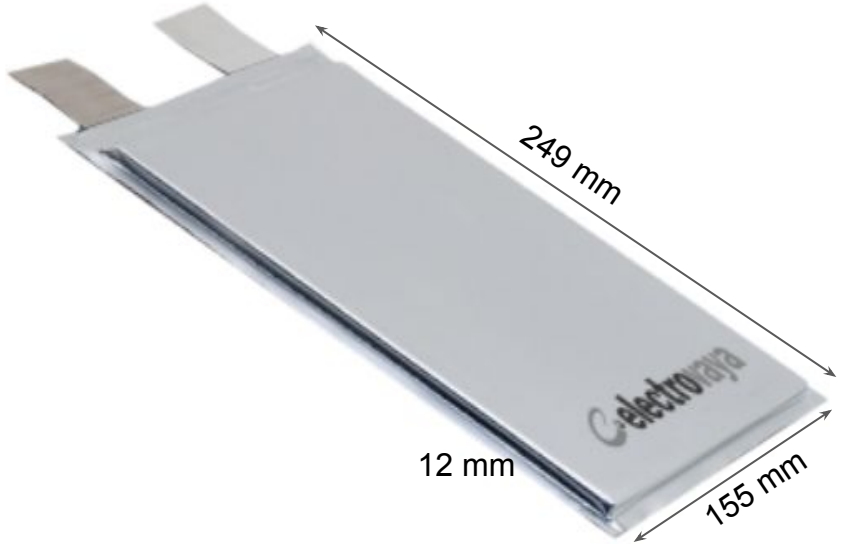
APPLICATION	Energy Density	Cycle Life	Power Capability	Safety	Cost	Operating Voltage	Supply Chain
 ESS  Warehousing  AGV	165 Wh/kg 330 Wh/L	>14,000 cycles +35 years at 1 Cycle/day	Up to 9C peak Up to 3C continuous	Superior: higher flash point vs. NMC chemistry (270C vs. 215C): lower risk thermal runaway: UL2580 certification underway	Lower than NMC Chemistry: ~30% in $/kWh, Lower	Deliver a substantial portion of their nominal capacity within 2.9-3.65V, Drop-in replacement for NMC	No use of scarce metal e.g. Co/Ni, lower price volatility Supply chain resilience

electrovaya

Infinity LFP Launch: LFP EV-FP-44

Building block of Electrovaya products: LFP based Lithium-ion cells with unique ceramic composite separator and electrolyte balanced for high and low temperature operations

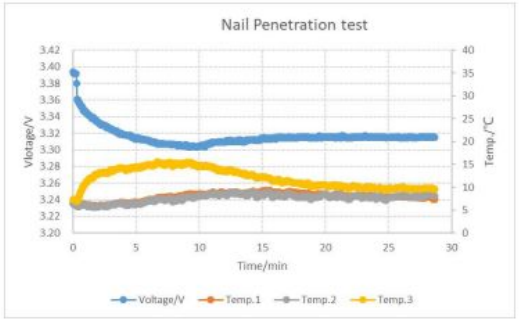
	Specification	
Nominal Capacity	44Ah (LFP) @ 0.5 C-rate	
Energy Density	**Gravimetric**	165 Wh/kg
	Volumetric	~330Wh/L (edge folding)
Voltage	2.5-3.65 V (nominal = 3.2V)	
Charge	Continuous 2C, Peak: 4C for 60 sec	
Discharge	Continuous 3C, Peak: 5C for 10 min & up to 9C for 30sec	
Cycle Life/Longevity	14,000 cycles @ 90% SOC, 10+ years	
Operating Temperature	Discharge: -30°C to 54°C / Charge: 0°C to 54°C	
Weight	850 +/- 25 g	

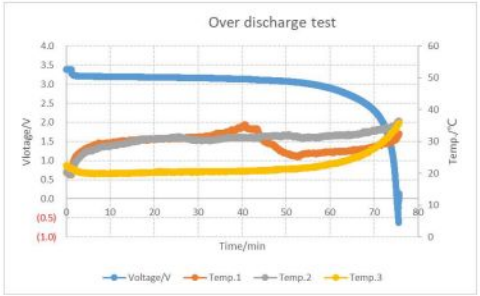


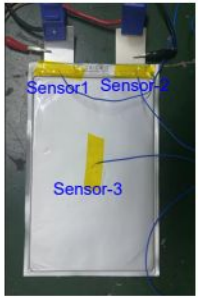
UN38.3 and UL2580 Recognition (underway)

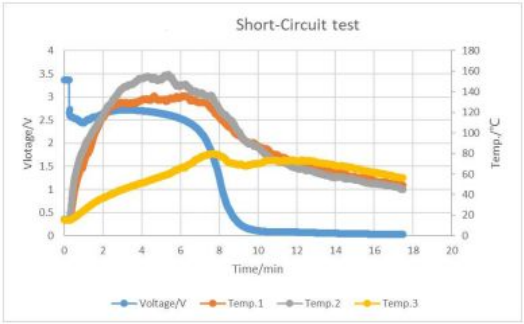
electrovaya

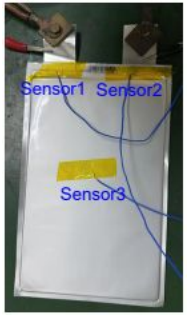
LFP EV-FP-44-Safety Tests

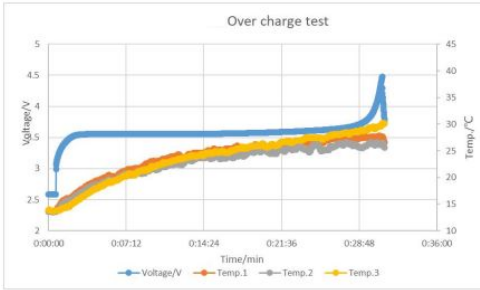


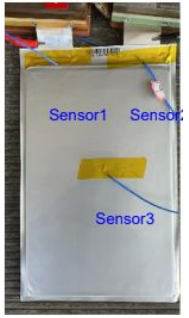












electrovaya

High Voltage-Offerings: Energy Storage Systems

- Electrovaya will launch its next generation microgrid/grid stationary battery systems in early 2025
- These systems will feature its EV-44 LFP cells, which provide similar benefits with regards to safety and longevity as its current NMC based Infinity products, but at lower cost
- Electrovaya will be using its latest generation high voltage battery management system which is already in commercial use

A grid scale Electrovaya energy storage system installed in Toronto, 2015

Expansion Plan- Jamestown Factory

130,000 sq ft
Industrial facility

$0.05/kWh
Low energy cost

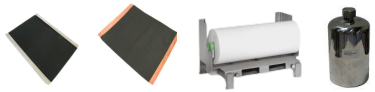
100%
Renewable Energy

3 Hours
Distance to HQ and Key Customers

Battery Supply Chain

Cell Components

Cathode, Anode, Electrolyte:
>80% non Chinese supply chain; 100% target by 2028 for Jamestown produced products
Separator:
Japan & Jamestown Production



01

Cell Assembly

02

Jamestown (ELVA owned)
&
Contract MFr (ELVA controlled)

Battery Assembly

04

Jamestown
(HV New Opportunities)
&
Ontario (Forklifts)

Module & BMS

03

Jamestown, NY
&
Ontario

Our Products: Technology Solutions

Complementary technologies targeting a number of EV applications
Infinity Batteries provide industry leading longevity and SSBs provide industry leading energy density

Infinity Batteries

Commercial today
Global partners & users

Superior Safety & Lowest Cost of Ownership

Based on proprietary separator and electrolyte technology

E-bus, E-forklift, E-trucks, Energy storage systems

Solid State Batteries

In development stage

Highest Energy Density

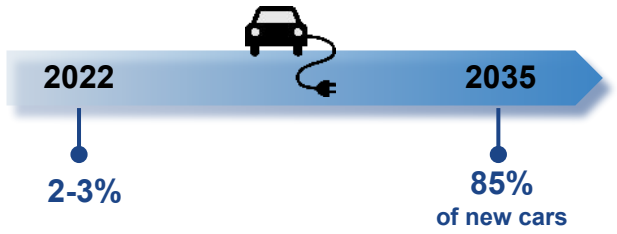
Based on proprietary separator and electrolyte technology

Passenger EVs, Over the road (OTR) trucking, aerospace

Our Products: Next Gen-Solid State Batteries (SSB)

Solid State Promises Much Higher Energy Density = More Range, Less Weight, Less Cost

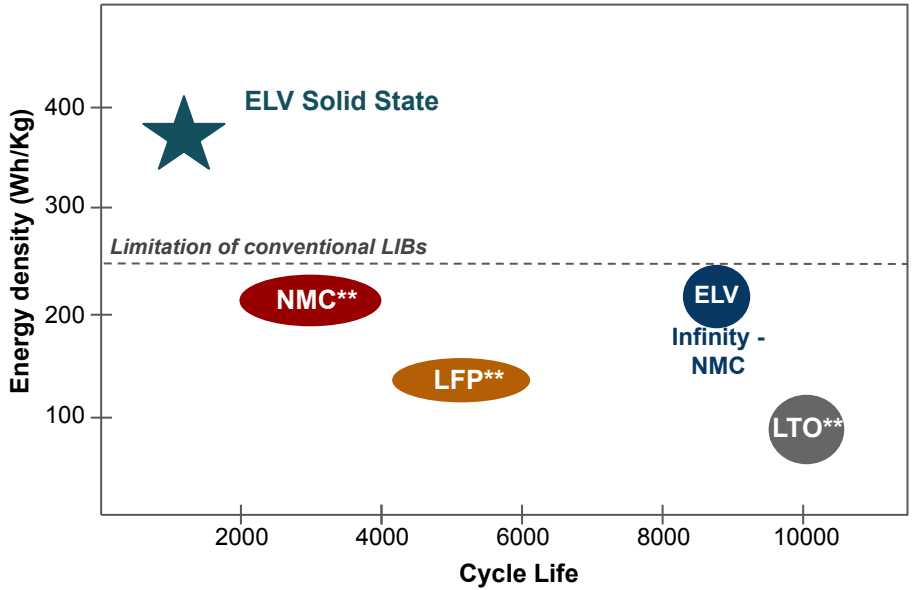
EV penetration in the global vehicle market



Battery Requirements for E-cars adoption

- *Energy Density > 350 Wh/Kg (>750 Wh/L)*
- *>10 years lifetime*
- *Superior Safety*
- *Cost < 100 $/Kwh for cells*

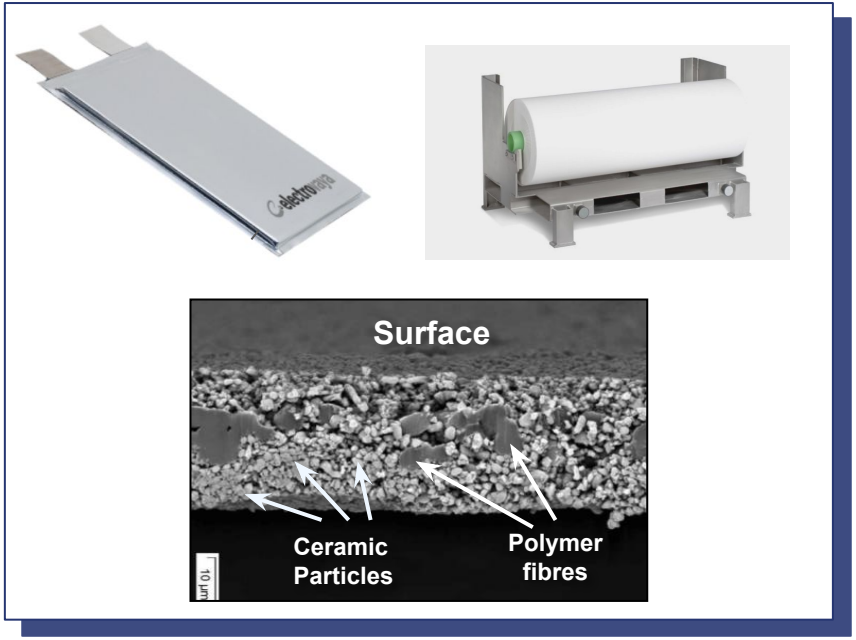
Solid State Batteries offer 2X Energy Density over conventional lithium ion batteries= more range, less weight, less cost



** Competitor data sheets/estimates

Electrovaya - Unparalleled Ceramic Separator Experience

Electrovaya has extensive experience employing **full ceramic separators** for lithium ion batteries



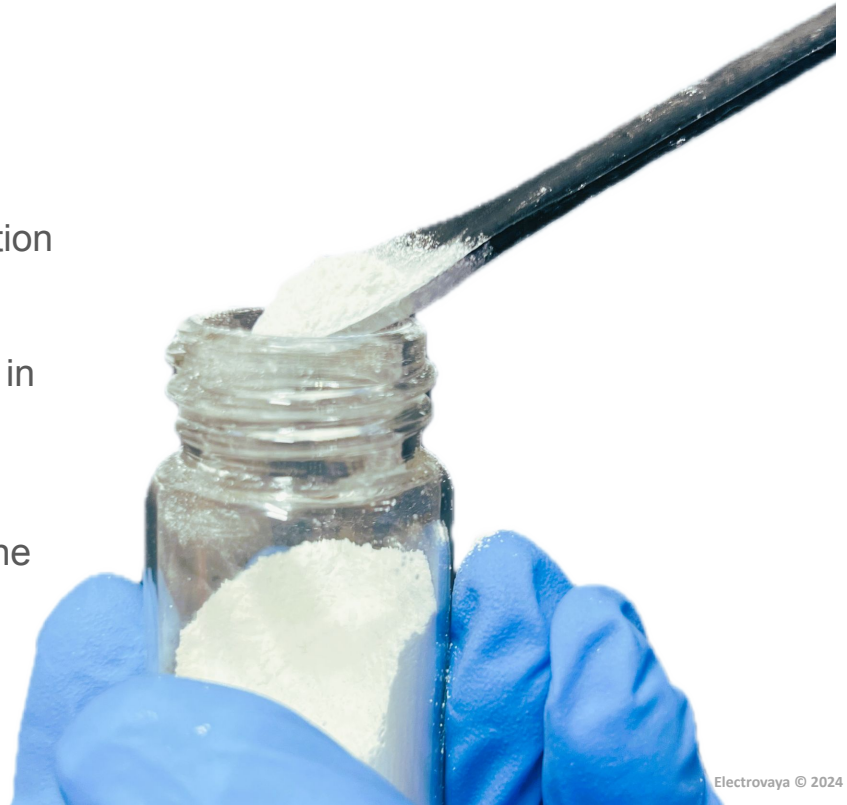
Electrovaya Strength

- Robust IP library for ceramic separators in lithium-ion batteries (36 patents)
- Substantial experience and know-how in the manufacturing of flexible ceramic separators.
- The only company who has commercialized the use of ceramic separator for LIB (Z-fold assembly)

Electrovaya - Unparalleled Ceramic Separator Experience

The transition to Lithium Metal batteries is almost certainly going to require the use of **high quality ionically conducting ceramic materials**

- **Higher Energy Density:** Enables the use of Lithium metal anode
- **Improved Safety:** High thermal stability, mitigation of thermal runaway, non-flammable
- **Enhanced Conductivity:** Inherent conductivity in the ceramic with efficient ion transport at room temperature
- **Increased Cell Longevity:** Actively suppress the formation of lithium dendrites

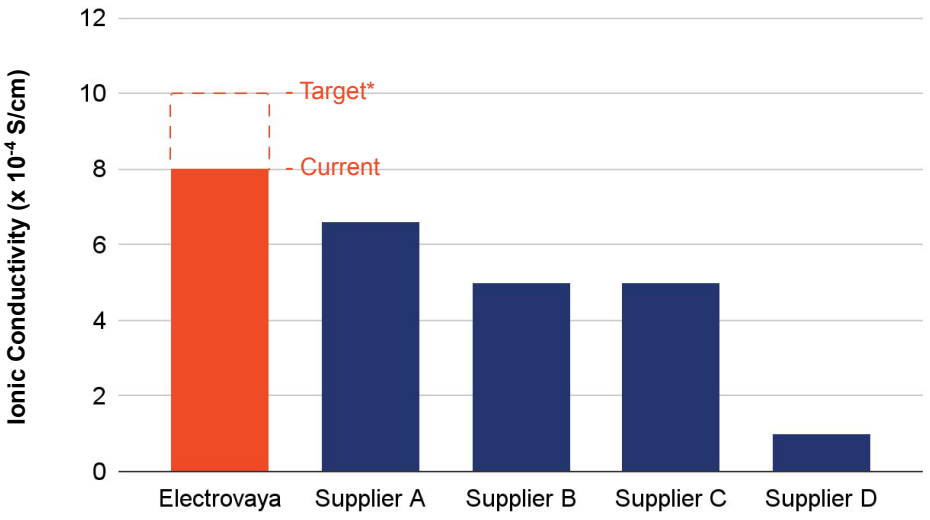


Electrovaya - Unparalleled Ceramic Separator Experience

Electrovaya has developed an in-house production method for critical ionically conducting ceramic materials using a **cost-effective and scalable processes**

Bulk Ceramic Ionic Conductivity > 8 x 10^{-4} S/cm, with a target of 10 x 10^{-4} S/cm

Proprietary Synthesized Ceramic powder



*December 2024

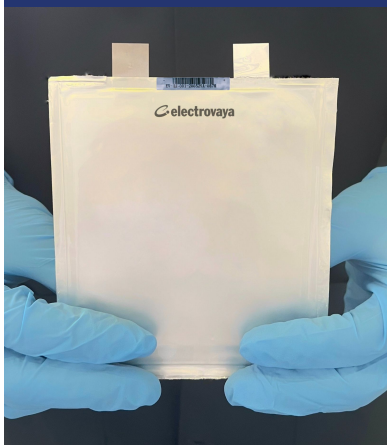
Electrovaya - Unparalleled Ceramic Separator Experience

Electrovaya has developed a scalable manufacturing approach for the preparation of **flexible ceramic composite separators**

Proof-of-Concept Separator Development

Scaling to > 100cm^2 Manufacturing

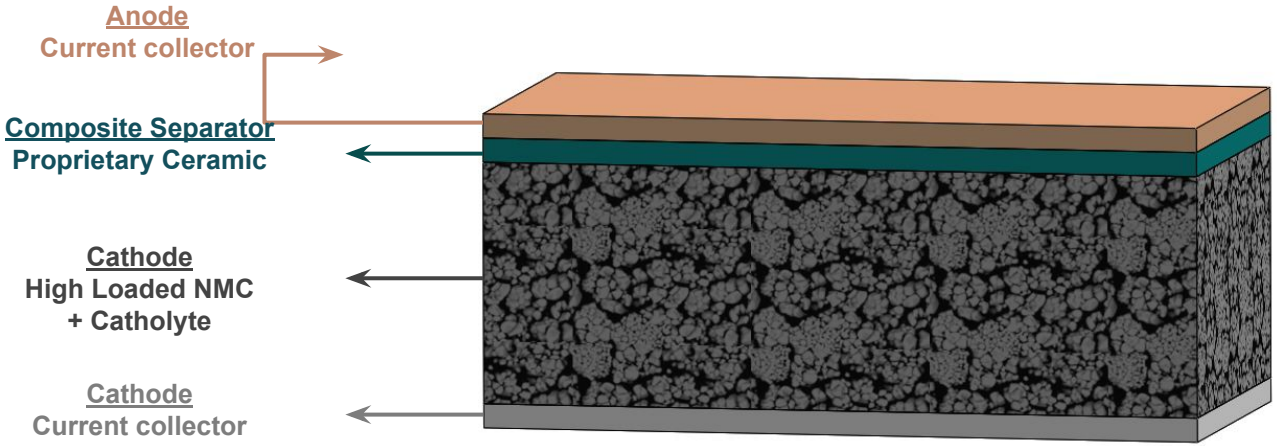
Pouch Cell Prototyping



Lithium Metal Batteries - Electrovaya Cell Design

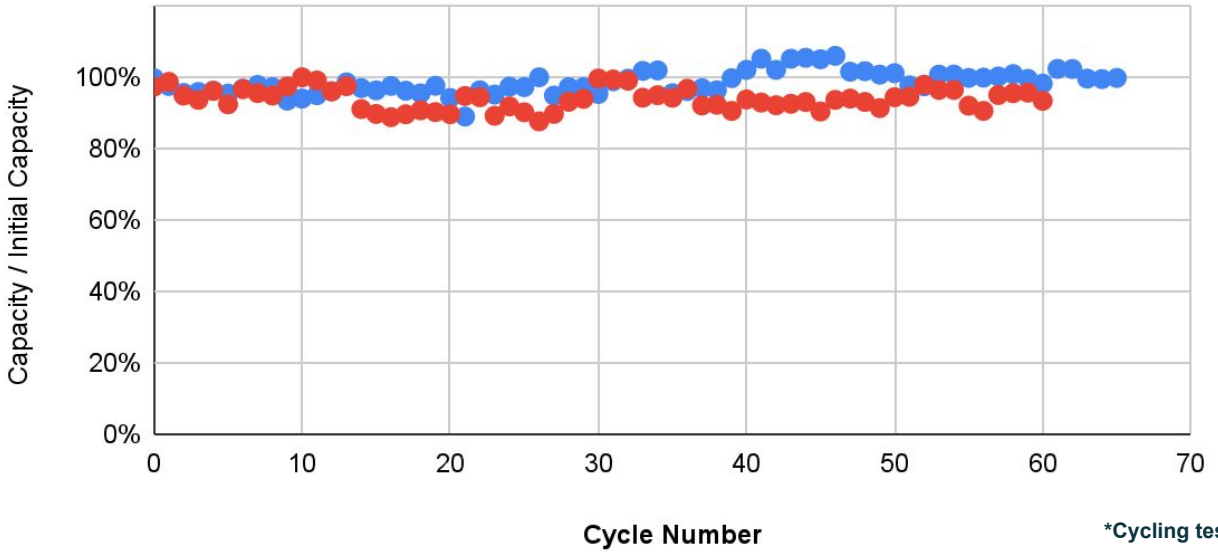
Solid State battery platform with versatile proprietary composite separator

Four Solid State Battery Related Patents Filed



Lithium Metal Batteries - Pouch Cell Performance

	Cell Specification
Dimensions	3x3 cm, Single Layer
Nominal Capacity	18 mAh



*Cycling tests are ongoing

Lithium Metal Batteries - Prototype Roadmap

Conducting Ceramic Synthetic Process Development

> 10 mAh Pouch Cell Prototype

> 50 mAh Pouch Cell Prototype

Prototype sampling for leading automotive manufacturer

> 500 mAh Pouch Cell Prototype

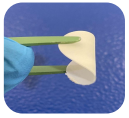
2023

2024

2025

2026

Proof-of-Concept Ceramic Separator Development

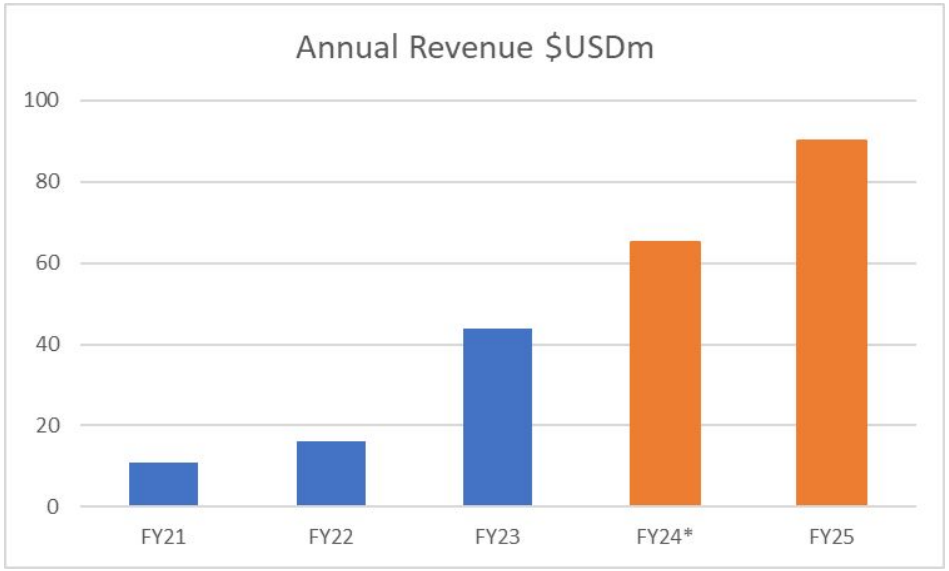


Conducting Ceramic Production Scale-up

> 130 mAh Pouch Cell Prototype

Financial Performance: Bottom Line Focus

Market demand provides STRONG TAILWIND for accelerating revenue growth



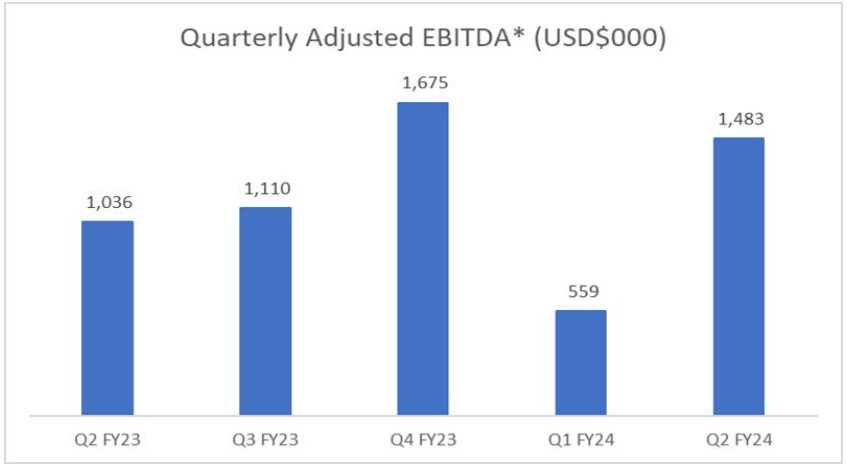
Key Revenue and Margin Drivers

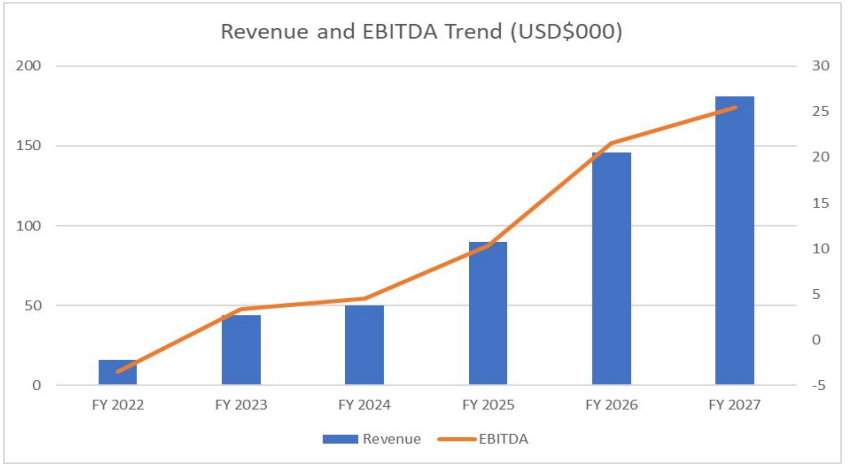
- FY 2023 **revenue more than doubled** due to **increased orders** driven by **strong market demand**
- Expanding capacity provides opportunity to further accelerate revenue growth
- Breakeven ~$50 million/annum with incremental revenue contributing to net profits
- Margins have improved steadily with Q2FY2024 margins at 35%
- Trailing 12 month adjusted EBITDA at $5.75 million (12%)
- Current backlog of $45 million and frontlog of $68 million

*Approximately $20 million of the FY24 anticipated revenue is dependent on customers' new distribution center sites. Any delays in the startup of these sites may lead to a proportion of revenue moving into the subsequent fiscal year.

Financial Performance: Profitability Inflection Achieved

Reaching an inflection point… set to be one of the only profitable battery companies in North America





- Operational efficiencies and cost savings drove positive EBITDA in FY23 and into FY24.
- **Trends illustrate positive trajectory**

- Significant growth expected in Revenue and EBITDA
- Jamestown production coming online mid 2025
- Expansion into multiple revenue streams

** Non-IFRS Measure: Adjusted EBITDA does not have a standardized meaning under IFRS. Therefore it is unlikely to be comparable to similar measures presented by other issuers. We believe that certain investors and analysts use Adjusted EBITDA to measure the performance of the business. Adjusted EBITDA is defined as loss from operations, plus finance costs, stock-based compensation and depreciation costs.*

Investor & Media queries, please contact:

Jason Roy

VP, Corporate Development & Investor Relations

Phone: 905-855-4618

Email: **jroy@electrovaya.com** Web: **www.electrovaya.com**

Toronto Stock Exchange (Nasdaq:ELVA) & (TSX:ELVA)

Nasdaq: ELVA | TSX: ELVA